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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,486	11/14/2001	Kristin J. Dana	RUT.01-013US	5167

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DANN, DORFMAN, HERRELL & SKILLMAN
1601 MARKET STREET
SUITE 2400
PHILADELPHIA, PA 19103-2307

EXAMINER	
ROSENBERGER, RICHARD A	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/992,486	DANA, KRISTIN J.	
	Examiner	Art Unit	
	Richard A Rosenberger	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-111 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-111 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/25/02.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 9 claims that "the source aperture comprises a central obscuration". The only support for this limitation in the instant specification appears to be on page 12, lines 1 and 2. However, there is no disclosure as to the purpose or use of such a source aperture central obscuration or its specific structure. There does not appear, based on the remainder of the disclosure, any reason to have such a source aperture obscuration, and it is not clear what use or effect such a source aperture central obscuration would have for the functioning of the system, not how such a source obscuration could be placed in the system without actually interfering with the operation of the system. Thus the instant specification does not adequately teach those in the art to make and use such a system with a central obscuration in the source aperture.

Claim 12 states that "the reflector is a half-silvered reflector". The support in the specification appears to be only in the paragraph bridging pages 21 and 22, which states only that

> In some fields, it is desirable to subject a sample to ambient illumination in addition to illumination from the source 20. For this purpose, the reflector 50 may be a half silvered reflector that permits ambient radiation to pass through the reflector and illuminate the surface of the sample.

This passage does not identify the fields, not does it set for how such a structure could be used with the detectors of the disclosure nor how other measuring systems could be incorporated into the system. Additionally, for the disclosed measurement, such a presence of ambient light would interfere with the disclosed measurement by at least partially masking the scattered light desired to be measured. Thus the disclosure does not adequately teach how to make and use such a system with a half-silvered paraboloid mirror.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 8-10, 12, 14-15, 18, 30-32, 35, 37, 39, 42, 44, 48-51, 54, 58-59, 62, 74-75, 78, 80, 82, and 84-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toba et al (US 5,371,582).

As to claim 1, Toba shows, in figure 3 in particular, an apparatus comprising a source (light emitting element 2) producing a radiation beam, and a paraboloid reflector (parabolic mirror 12; column 3, line 66) with an optical axis parallel to the path of the beam (column 3, lines 56-59). The light beam strikes the reflector at a first location and focuses the light beam onto the sample at an incident angle (column 3, lines 54-55). Light "emitted" (scattered and reflected) from the sample strikes the reflector and is redirected to a detector (6), which receives the light so redirected.

Although the reference does not explicitly state that the beam is substantially collimated, a fair reading of the reference makes it at least obvious that the beam be substantially collimated. The reference discusses the reflector focusing the light (column 3, line 55), which at least suggests that the beam incident on the reflector be substantially collimated so that it will be so focused.

The light form the sample has some distribution, and the detector (6) receives the distribution; claim 1 is consistent with the detector receiving only a part of the light distribution (otherwise dependent claim 15 would be redundant and not further limit its parent claim, and thus be an improper dependent claim). The claim states only that the detector "receive" the light distribution, it does not state that

the detector measures or determines the distribution per se. The single output of the detector (6) is a result of the light source "receiving" (a portion of) the light distribution.

As to claims 2, 3, 48, and 49, the reference teaches moving the light source (2) to determine the position that the light beam strikes the reflector (12) (column 3, lines 65-67). It is at least obvious to provide means for this movement, which is the "beam steerer" as set forth in claims 3 and 49.

The light source (2) inherently has some source aperture that defines the width of the beam (instant claims 4, 50), and this inherent aperture moves with the light source to determine the position of the first location on the reflector (instant claims 5, 51). It is at least obvious that the effective aperture the light source be circular, the use of a circular beam would be the normal default shape of the beam (instant claim 8). As set forth above, the use of a collimated beam would have been obvious; providing appropriate optics to provide this collimation would have thus been obvious (instant claims 10, 54).

The reflector (12) of the reference is a concave paraboloid (instant claims 14, 58), and the reflector, being large enough to accommodate a wide range of angles, will receive the entire emitted radiation (instant claims 15, 59). Not that these claims state that the reflector, not the detector, receives the entire emitted radiation distribution. As shown in figure 3 or the reference, the location of a ray in

the detection plane (not the detector, but the detection plane) corresponds to the angle which the ray struck the reflector (instant claims 18, 62).

The reference shows moving the detector with respect to the reflector to vary the portions of the emitted radiation received by the detector (instant claim 30). The detector inherently has an aperture with will pass light to its detection area (instant claims 31, 32, 74, 75). It would have been obvious to use a detector with a circular aperture (instant claims 35, 78).

The focal point of the reflector (12) of the reference is proximate to the sample location is proximate to the surface of the sample (instant claims 37, 39, 80, 82).

It would have been obvious to use the sort of measuring system of the reference as a general measuring instrument, and as a general measuring instrument it would have been obvious to provide means to move the sample to allow measurements as more than one location on the sample to be able to measure consistency of thickness and the like (instant claims 42, 84).

The light source (2) of the reference includes a linear polarizer (3) (instant claims 43, 85), and the source emits electromagnetic radiation ("light") (instant claims 44, 86).

As to independent claim 48, the reference shows or clearly suggests the claimed subject matter, including the light source producing collimated radiation, the paraboloid reflector,, and the detector, with means to move both the light source (2) and the detector (6).

5. Claims 1-111 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNeil et al (US 5,703,692) in view of Pearson et al (US 5,541,413) and Toba et al (US 5,371,582), and Tsuji et al (US 5,270,794).

McNeil et al shows a device and method with a light source (105), means to vary the location of the light source on a focusing means (110) in order to vary angle of incidence on a sample (scanner 150 in fig 3c, and other means shown, for example, in claims 4, 6a, and 7a), and shows means for receiving, and detecting, the distribution of light "emitted" from the sample, which can be a detector array (column 8, lines 24-35).

McNeil does not show the use of a paraboloid mirror to direct and focus the light from the light emitting means to and from the sample, but uses a lens (110) instead. It is known in the art that in general reflective optics can be used to replace refractive optics, and in particular it is known in the art that in a similar system a paraboloid mirror can be used in a manner identical to the use of the mirror of McNeil et al; this is shown by Toba et al, figure 3 in particular. In both the light beam is translated to be received by the focusing element (either the lens or mirror) at different points, which then, because of its focusing properties, focuses the light onto a selected point on the surface being measured at different angles. In both light from the surface being measured is directed back to the focusing element, which collimates the light and directs it to a detection arrangement. A similar use of

reflective optics is shown by Pearson et al in figure 2, in which paraboloid mirror 36 is used to both focus light onto the surface being tested and to receive light from the surface and direct it to a detector. Those in the art would have found it obvious to use reflective optics, as shown by Toba et al and Pearson et al, for the refractive optics of McNeil et al, because, as shown by the references, the two are known to be functionally equivalent and those in the art know how to use such reflective optics in similar arrangements.

McNeil et al and Toba et al together show a variety of different manners of changing the location of the light spot on the focusing means to change the angle of incidence on the sample; Toba et al shows moving the light source, while McNeil et al shows various other means. Those in the art, particularly given the variety of means shown by the references, would recognize that the particular means for directing the light beam to the focusing means is not critical, and that other known arrangement s for such control of the position of the light beam on the focusing means would have been obvious. Those in the art would have been able to, using only ordinary skill, use known means to control the size and shape of the beam in order to adjust the system to a range of different samples with differing physical characteristics; note the use of a spot size changing means in Tsuji et al (column 20, line 17), which shows a similar system with a focusing means (31b) which focuses light onto a sample and receives light form the sample to collimate it and direct it, via a beam splitter, to a detector arrangement (43) to measure the distribution of

that light. The use of filters and the like are known and common in the art and those in the art could use them as appropriate for particular tests and samples as advantageous; see the use of filters (32a, 32b, 42) in Tsuji et al.

6. Messerschmidt et al (US 5,636,633) shows a system for measuring diffuse reflectance using reflective optics.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
2 September 2004

Richard A. Rosenberger
Primary Examiner